

**CASE PRESENTATION**

**GIANT CORONARY ARTERY ANEURYSM  
FOLLOWING SIROLIMUS-ELUTING  
STENT IMPLANTATION**



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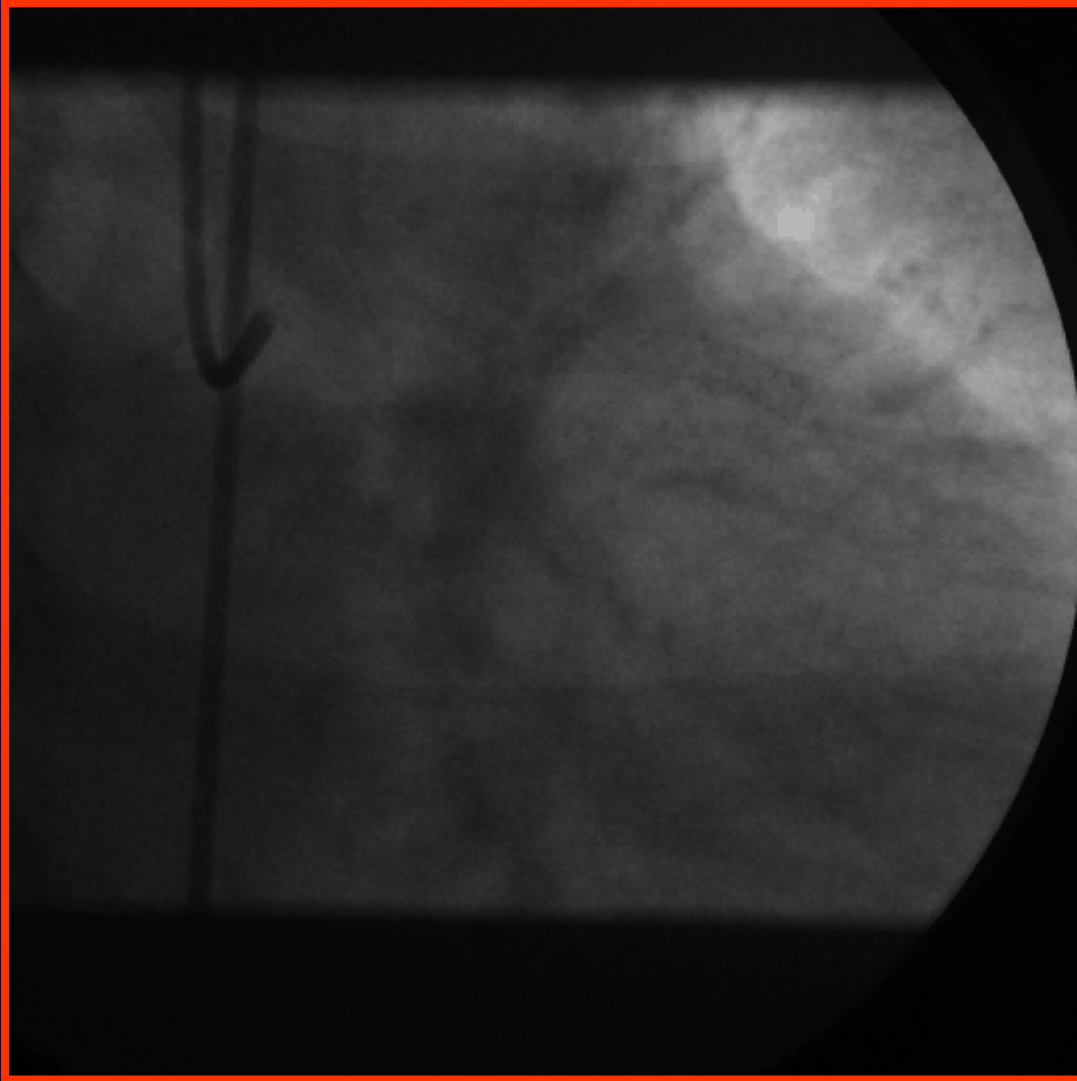
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## CLINICAL PROFILE

- **YG** ● **56 Male** ● **DM ⊗** ● **Hypt ⊕**
- **CAD - Unstable Angina**
- **LVEF** : **55%**
- **CAG (Nov 05')** : **Single Vessel Disease**
- **Adhoc PTCA / Stent** : **Cypher Select (3x33mm)**  
**LAD**
- **Recurrent Angina After Five Months with ST-T**  
**Changes and Haemodynamic Instability**

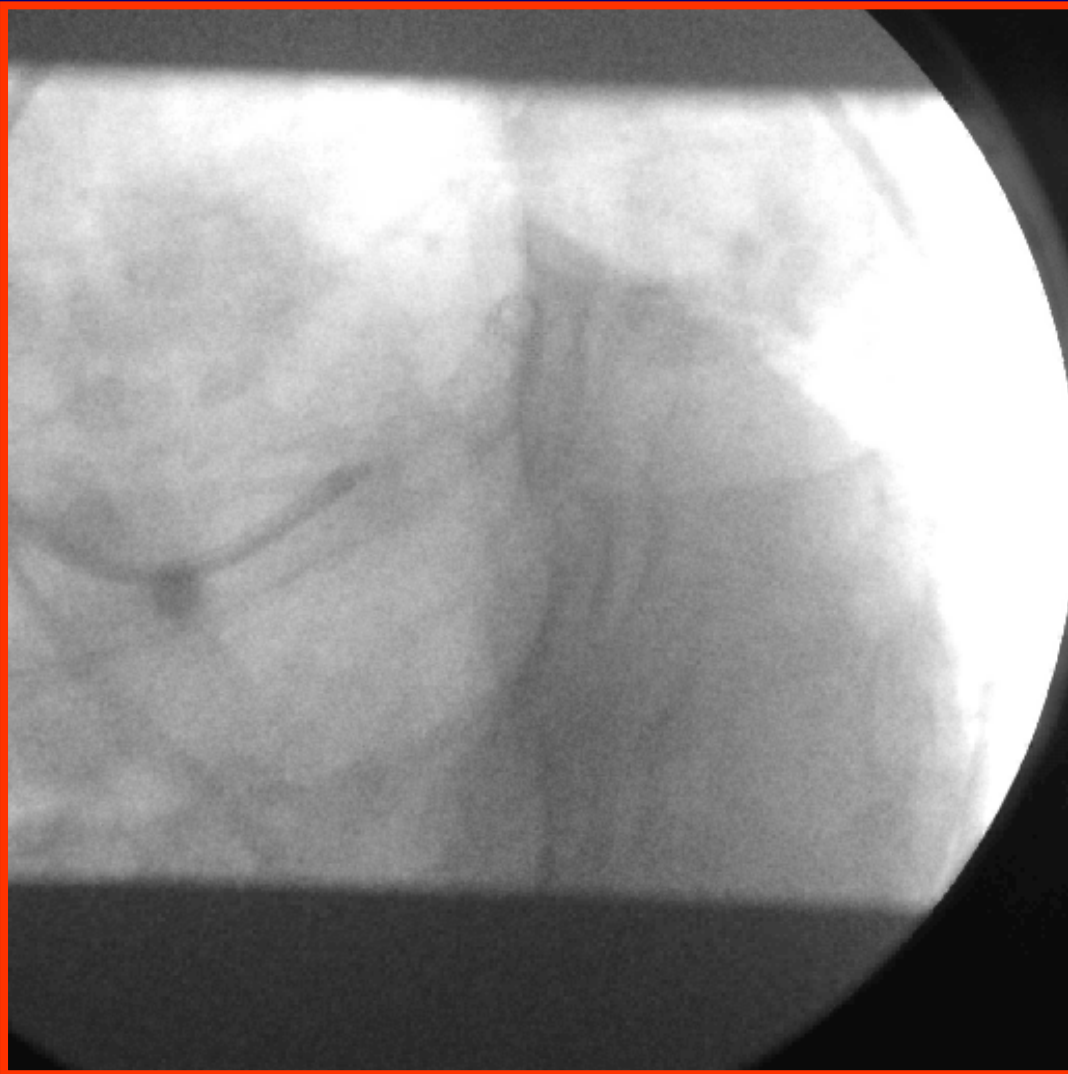
# LEFT CORONARY ANGIOGRAM AFTER DEPLOYMENT OF DES



## RAO VIEW

- **Deployment of DES**
  - **Stent : Cypher**
  - **Size : 3.5x33mm**
  - **Pressure : 13 Atm**

# LEFT CORONARY ANGIOGRAM AFTER DEPLOYMENT OF DES



## LAO CAUDAL

- **Deployment of DES**
  - **Stent** : Cypher
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  - **Pressure** : 13 Atm

# **GIANT ANEURYSM OF LAD AFTER IMPLANTATION OF CHYPHER STENT**

## **POST IMPLANTATION FOLLOW-UP COURSE**

- **Asymptomatic for 5 Months**
- **TMT after 2 Months of Implantation Negative**
- **Received Plavix, Aspirin, Statins and Beta-Blockers on Follow-up**

# GIANT ANEURYSM OF LAD AFTER IMPLANTATION OF CHYPHER STENT

## FIVE MONTHS AFTER IMPLANTATION

- **Developed Severe Chest Pain with Sweating**
- **Examination After Admission :**
  - Sinus Tachycardia (Rate : 104 bpm)
  - Hypotension (BP : 80 mm Hg Systolic)
  - Mild LVF
  - New Onset MR
  - ECG : Junctional Rhythm with ST Depression in  $V_1 \rightarrow V_5$
  - Trop-T : Negative
- **Management :**
  - Inotropes, UFH, Plavix, Aspirin, GPIIb/IIIa (Tirofiban)

# PSEUDOANEURYSM OF LAD FOLLOWING CYPHER IMPLANTATION

## SURGICAL FINDINGS

- Large **Pseudoaneurysm** Arising from Proximal LAD Between LAA and PA
- Large **Rent** in Proximal LAD on the Medial Wall of Aneurysmal Sac

# **PSEUDOANEURYSM OF LAD FOLLOWING CYPHER IMPLANTATION**

## **OPERATIVE NOTES**

- **Sac Opened**
- **Stent Explanted**
- **Rent Along with Stented Segment of LAD  
Closed with Running Sutures**
- **Aneurysmal Sac Obliterated over Teflon Felt**
- **SVG Anastomosed to LAD and OM**
- **Procedure Done Under IABP Support**
- **Blood Cultures - Negative**



# **CORONARY ARTERY ANEURYSM AFTER DES IMPLANTATION PATHOPHYSIOLOGY**

- **Hypersensitivity / Inflammatory Reaction**
  - Antirestenotic Drug
  - Polymer
  - Stent Platform
- **Incomplete Endothelialization**
- **Late Acquired Incomplete Stent Apposition  
(8-10%)**

# CORONARY ARTERY ANEURYSM AFTER DES

## INCIDENCE FROM RANDOMIZED TRIALS

**Vessel Diameter 20% or More Compared with Reference Vessel Diameter on Follow-up**

**Incidence**

<b>BMS</b>	<b>DES</b>	<b>p</b>
<b>1.1%</b>	<b>0.8%</b>	<b>0.512 (NS)</b>

# CORONARY ARTERY ANEURYSMS ASSOCIATED WITH DES vs BMS

Study	DES n/N	BMS n/N	Odds ratio	Odds ratio (95% CI)
SIRIUS (5)	2/350	4/351		0.499 (0.091, 2.740)
TAXUS II SR (31)	3/131	1/136		3.164 (0.325, 30.812)
TAXUS II MR (31)	1/135	3/134		0.326 (0.033, 3.173)
TAXUS IV (6)	2/292	2/267		0.914 (0.128, 6.533)
TAXUS V (32)	7/498	1/492		7.000 (0.858, 57.107)
TAXUS VI (33)	3/209	1/207		3.000 (0.310, 29.079)
Total	18/1615	12/1587		1.326 (0.571, 3.078)

Test for heterogeneity  
 $\chi^2=6.335$  (d.f =5),  $P=0.275$   
 Test for over all effect  
 $Z=0.656$ ,  $P=0.512$

0.01 0.1 1 10 100  
 Favours DES Favours BMS

# CORONARY ARTERY ANEURYSM AFTER DES

## DATA OUTSIDE RANDOMIZED TRIALS

- **Kachru et al** (AJC 2005; 96 Suppl 7A)
  - 0.2% out of 2408 DES
  - Routine Angiography Not Done in All
- **Rha et al** (AJC 2005; 96 Suppl 7A)
  - 1.7% at 6-Months Angiographic FU
- Case Reports in 'Real World' Lesions
  - **24 Cases Reported in World Literature**

# CORONARY ARTERY ANEURYSM AFTER DES FOR 'REAL WORLD LESIONS'

## CASE REPORTS (N = 24)

- **Age (Years)** : 32–75
- **M : F** : 14 : 10
- **Type of DES**
  - **SES** : 15 (62.5%)
  - **PES** : 9 (37.5%)
- **Target Vessel**
  - **LAD** : 14 (58%)      ■ **LCx** : 4 (16.6%)
  - **LMT** : 2                      ■ **RCA** : 4 (6.6%)
- **Timing After DES**  
: 3 Days – 4 Years

# CORONARY ARTERY ANEURYSMS

## PROPOSED CLASSIFICATION

### Type I

- Rapid Growth with Pseudoaneurysm Formation
- Generally Diagnosed within 4 Weeks
- Clinical Pericarditis

**Secondary to Arterial Injury Related to PTCA**

### Type II

- Subacute / Chronic Formation
- Incidental Finding During Angiography
- Variable Presentation ASx → Ch. Angina

**Chronic Arterial Response to Stent / Polymer / Drug**

### Type III

- Mycotic / Infectious in Aetiology
- Presentation with PUO

**Infection + Local Immuno-Suppressive Effect of Drug**

# **PSEUDOANEURYSM OF CORONARY ARTERY AFTER IMPLANTATION OF DES**

## **COMPLICATIONS**

- **Rupture → Tamponade → Death**
- **Stent Thrombosis → Distal Embolization**
- **Infection → Prolonged Fever**

# TREATMENT MODALITIES FOR ANEURYSM OF CORONARY ARTERY FOLLOWING DES

- **Percutaneous Intervention (True Aneurysm)**
  - Stent Graft
  - Coil Embolization
- **Surgical Treatment (Pseudoaneurysm)**
- **Careful Follow-up with Repeat Angiogram after 4-6 Months**



# **GIANT ANEURYSM OF LAD AFTER IMPLANTATION OF CYPHER STENT**

## **FINAL DIAGNOSIS**

- **CAD Unstable Angina (ACS)**
- **PCI with Implantation of Cypher Stent**
- **Large Pseudoaneurysm of Proximal LAD  
Between LAA and PA**
- **Surgical Intervention**
  - **Obliteration of Aneurysm over Teflon Felt**
  - **SVG to LAD and OM**

# **GIANT ANEURYSM OF LAD AFTER IMPLANTATION OF CYPHER STENT**

## **CONCLUSION**

- **Coronary Artery Aneurysm after DES Rare but Well Reported Complication**
- **Precise Pathophysiology Not Known**
- **Diagnosis Most Often by Routine Angiography on Follow-up**
- **Pseudoaneurysm Presenting with Acute Chest Pain Potentially Life-Threatening Complication**
- **Immediate Surgical Management is the Treatment of Choice**